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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/763,354	01/23/2004	Randy Hoffman	200311820-1	7100
22879 7590 03/12/2007 HEWLETT PACKARD COMPANY P O BOX 272400, 3404 E. HARMONY ROAD INTELLECTUAL PROPERTY ADMINISTRATION FORT COLLINS, CO 80527-2400			EXAMINER ERDEM, FAZLI	
			ART UNIT	PAPER NUMBER
			2826	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/12/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/763,354

Applicant(s)

HOFFMAN, RANDY

Examiner

Fazli Erdem

Art Unit

2826

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 November 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 24-28 and 41-50 is/are pending in the application.
- 4a) Of the above claim(s) 47-50 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 26-28 is/are allowed.
- 6) ☒ Claim(s) 24, 25 and 41-46 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 24-25 have been considered but are moot in view of the new ground(s) of rejection. Kawaski was brought in to disclose a "oxide" semiconductor channel.

Election/Restrictions

2. Applicant's election with traverse of claims 24-28 and 41-46 in the reply filed on 09 November 2006 is acknowledged. The traversal is on the ground(s) that by amending claims 47-50, a "different kind of oxide channel material" could no longer be used thus the inventions are no longer independent or distinct. This is not found persuasive because the invention is still distinct because the product as claimed can be made by a different process.
3. The requirement is still deemed proper and is therefore made FINAL.

Allowable Subject Matter

4. Claims 26-28 allowed.
5. The following is an examiner's statement of reasons for allowance: Prior art failed to establish a thin-film transistor with a deposited thin-film semiconductive channel where the first portion of the semiconductive channel is doped with a donor-type impurity to increase positive fixed electrical charge density within the first portion relative to the second portion and thereby produce a negative shift in the gate threshold voltage or doped with an acceptor-type impurity to increase negative fixed electrical charge density within the first portion relative to second portion and thereby produce a positive shift in the gate threshold voltage.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 24, 25 and 41-46 rejected under 35 U.S.C. 103(a) as being unpatentable over Chiang et al. (4,598,305) in view of Gardner et al. (6,027,978) further in view of Kawasaki et al. (6,878,962)

Regarding Claims 24 and 25 Chiang et al. disclose a depletion mode thin film semiconductor photodetectors where in Figs. 1 and 7, it is disclosed a depletion mode thin film transistor 10 with source electrode 30, drain electrode 32, gate electrode 22, two layers of channel region 16 and 14 that have n doped upper layer and p doped lower layer and gate oxide dielectric layer that separates gate electrode 22 from the channel regions 16 and 14. Chiang et al. fail to disclose the required channel portions with different doping to control the threshold voltage and binary oxide type channel layer. However, Gardner et al. disclose a method of making an IGFET with a non-uniform lateral doping profile in the channel region where in claims 17, 32 and 36 channel portions with different doping to aid the threshold voltage control are disclosed. Furthermore,

Kawasaki et al. disclose a semiconductor device with channel layer 11 made of binary oxide type material as explained in column 2, lines 23-40, column 3, lines 41-55 and claim 4.

Regarding Claim 41-46, although, Chiang et al. disclose a single Thin Film Transistor, it teaches that the thin film transistor can be used for an array of display devices, i.e. in a plurality of display elements in column 1, lines 5-10 and 25-33.

It would have been obvious to one of having ordinary skill in the art at the time the invention was made to include the required differently doped channel portions in order to have a threshold voltage control and the required binary oxide channel region in Chiang et al. as taught by Gardner et al. and Kawasaki et al. in order to have a thin film semiconductor device with increased performance, controllability and better channel/substrate compatibility.

Regarding Claim 25, in Chiang et al. portion 16 is closer to the dielectric layer 20

Regarding Claim 41, in Kawasaki et al. Zinc Oxide channel layer 11 is deposited

Regarding Claim 42, in Kawasaki et al. channel layer 11 is zinc oxide.

Regarding Claim 43, Kawasaki et al. teach that a binary oxide material could be used as the channel layer as explained in column 2, column 3, and claim 4. Hence, instead of zinc oxide a tin oxide could be used.

Regarding Claim 44, Kawasaki et al. teach that a binary oxide material could be used as the channel layer as explained in column 2, column 3, and claim 4. Hence, instead of zinc oxide an indium oxide could be used.

Art Unit: 2826

Regarding Claim 45, in Fig. 1 and column 3, lines 45-65, layer 14 in Chiang et al. could be doped in a way to increase positive fixed charges by doping phosphorus.

Regarding Claim 46, in Fig. 1 and column 3, lines 45-65, layer 16 in Chiang et al. could be doped in a way to increase negative fixed charges by doping boron.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fazli Erdem whose telephone number is (571) 272-1914. The examiner can normally be reached on M - F 8:00 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sue Purvis can be reached on (571) 272-1236. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

FE
February 22, 2007


SUE A. PURVIS
SUPERVISORY PATENT EXAMINER